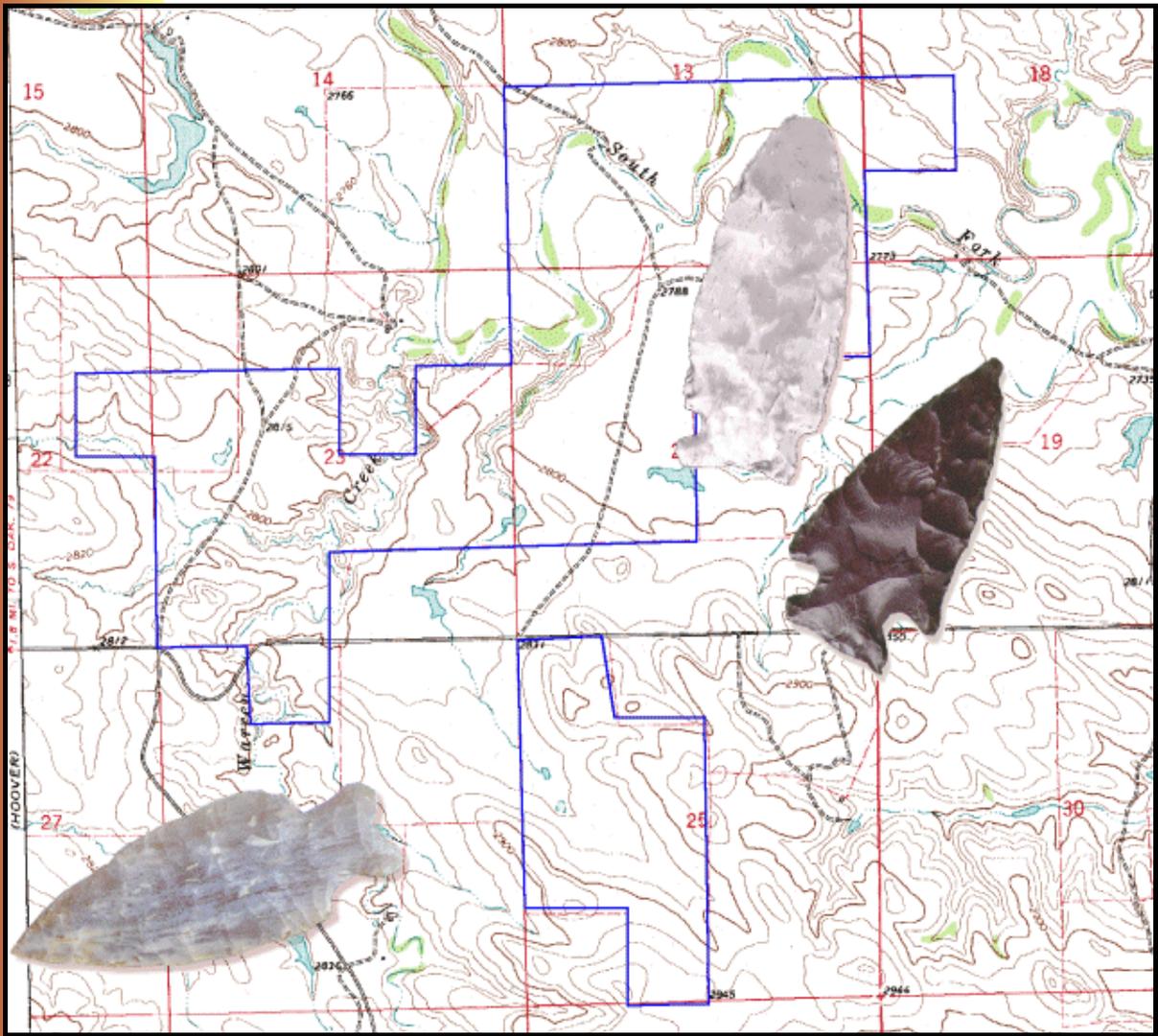


# **A SURFACE COLLECTION FROM NORTHWESTERN SOUTH DAKOTA**

**NORMAN G. FLAIGG**



***Special Publications in Archaeology No. 1  
S.D. State Historical Society Archaeological Research Center***

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by  
Norman G. Flaigg

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South Dakota State Historical Society  
Archaeological Research Center

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## Editor's Note

Norman Flaigg grew up on a ranch in Butte County, South Dakota in the 1930s. He became fascinated with the many traces of human antiquity on the land and took up collecting some of the arrowheads and stone tools to be found on the ranch. In time he grew up and left the ranch for other pursuits, but his interest in archaeology and history never left him. He kept his collection and in later life spent a great deal of time and effort identifying and classifying his artifacts. He also prepared notes and maps detailing the artifacts and where they were found. In 1992 he donated his collection, notes, and maps to the S.D. State Historical Society Archaeological Research Center, along with the manuscript for this volume.

Shortly before his death in 1999 he visited me and discussed his hopes that the manuscript could be published. Unfortunately, he relied very heavily on reference works which did not reflect the artifact classifications in use on the Northern Plains when he identified the artifacts. His health did not allow him time to work on rewriting the manuscript. In the end, I decided that his efforts should not be forgotten. His work demonstrates what a dedicated amateur can accomplish and contribute to our knowledge of the past. It is a testimony to one man's enthusiasm, determination, and devotion to the history of the land.

*A Surface Collection from Northwestern South Dakota* is the inaugural issue in a series of occasional reports directed at the general public. They will be published in electronic form on the World Wide Web to facilitate broader distribution.

Jim Haug  
January 2000



## Acknowledgments

Several persons helped in the preparation of this report. The advice by Dr. Dee Ann Story of the Texas Archaeological Research Laboratory and by Elton Prewitt of Prewitt and Associates is greatly appreciated. The overwhelming assistance and encouragement by the late Dr. Robert Alex, State Archaeologist for South Dakota, was especially appreciated.



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# Introduction

This is a report describing 250 artifacts I collected while growing up on a ranch in Butte County, South Dakota (Figure 1). These artifacts were collected during the period 1932–39. Most of the material was found on my father’s ranch (Louis Flaigg) or the adjoining ranches near Hoover, S.D. A few specimens were found in Harding, Pennington and Shannon Counties. All of the artifacts except two projectile points and a grooved abrader were found on the surface.

The stone tools consist of 14 bifaces, 12 perforators or parts of perforators, five scrapers, 101 complete or nearly complete projectile points, 32 tips, 25 midsections and 53 bases of projectile points, two “stemmed lunate unifaces”, four fully grooved mauls, one abrading stone, and one large D-shaped chopper or digging tool. The tool distribution is biased because it does not include all of the scrapers and bifaces I found. I was collecting “arrowheads” and the bifaces that were not knifelike and most of the scrapers were dropped by the ranchyard gate and are not reported here.

The collection also includes four steel projectile points, a number of glass beads and a few sherds.

## Environmental Setting

The collected area consists of several square miles in the vicinity of Hoover. Most of the collection was done on eroded areas bordering the creeks and draws tributary to the South Fork of the Moreau River. During the “dust bowl” days many areas became overgrazed and this facilitated collecting.

The climate of the area is semi-arid with an average precipitation of about 14 inches. Long hard winters and hot dry summers are common.

The ecozones consist of Brushy Draws, River Bottoms, River Terraces and Rolling Grasslands. The soils are mainly clays and clay loams formed from silty and clayey shales. The sub-strata consists of olive-gray and gray weathered and unweathered silty and clayey shales of the Cretaceous Period.

The grassland vegetation consists of western wheatgrass (*Agropyron smithii*), blue grama (*Bouteloua gracilis*), needle and thread (*Stipa comata*) and side oats grama (*Bouteloua curtipendula*). Major vegetation along the river and creeks includes Green ash (*Frazinus pennsylvanica*), cottonwood (*Populus* spp.), and some Boxelder (*Acer negundo*) with an understory of chokecherry (*Prunus vir-*



Figure 1: Location map.

*giniana*), American plum (*Prunus americana*), western wild rose (*Rosa woodsii*) and buffaloberry (*Shepherdia argentea*).

Major animals in the area consist of pronghorn antelope (*Antilocaprus americana*), coyote (*Canis latrans*), beaver (*Castor canadensis*), badger (*Taxidea taxus*), skunk (*Mephitis mephitis*), and raccoons (*Procyon lotor*). Raccoons may be latecomers to the area as we did not observe them on the ranch until in the late 1920s. Gray wolves (*Canis lupus*) were still common when the area was homesteaded.

The principal birds in the area are the western meadowlark (*Sturnella neglecta*), common nighthawks (*Chordeiles minor*), killdeer (*Charadrius vociferus*), vesper sparrow (*Poecertes gramineus*), mourning doves (*Zenaidura macroura*), black-billed magpie (*Pica pica*), sage grouse (*Centrocercus urophasianus*), turkey vulture (*Cathartes aura*), and an occasional golden eagle (*Aquila chysaetos*).

## Lithic Materials

The identification of materials used for artifacts is always difficult and it seems especially difficult for items found in northwestern South Dakota. The main problem is trying to differentiate between Knife River flint, a silicified lignite (Clayton, Bickley, and Stone 1970:282-290); petrified wood; and chalcedony, pseudomorphic after wood, found in the stream bars and gravel pits in the area.

The classification of siliceous rocks set up by Tarr (1931) is used in this report. The light- to dark-colored, translucent, siliceous stones with waxy to dull luster are called chalcedony. Knife River Flint is a brown chalcedony of various shades and is usually translucent on the thin edges except when it is loaded with inclusion. The massive petrified wood in the area often contains portions completely replaced by light to dark brown chalcedony. The chalcedony, pseudomorphic after wood, which I will call *Moreau chalcedony* in this volume, is found in the gravel bars of the South Fork of the Moreau River (which runs through the Flaigg ranch), in the thin veneer of gravel on some of the hills bordering the river, and in some of the scattered gravel pits in the area. It ranges from almost colorless to white through various shades of gray and tan to dark brown.

Light to dark gray, opaque, siliceous stones with waxy to dull luster are called chert. Red, yellow and brown opaque, siliceous stones with waxy to dull luster are called jasper. There is a problem here too. The Minnelusa chert, found in the Black Hills, has some yellow, pink and purple varieties. Fortunately, the Minnelusa chert is distinguished by a special "waxiness" which defies description but is distinctive. Other than the Knife River Flint, only black, opaque siliceous stones are called flint.

A very fine-grained gray to dull red quartzite is found locally in thin scatters on terraces and eroded areas along the river and creek banks. There is no local formation that provides this material so it was probably washed in from some source to the west. A number of artifacts were made of a moderate to coarse-

grained, light tan to dark brown quartzites which were probably quarried in the Black Hills (Hogback quartzite). Also several artifacts were made of a light gray to dark gray baked shale, called porcellanite. It is found in Montana, Wyoming and northwestern South Dakota.

A couple of artifacts were made of Tongue River silicified sediment. This is a fine-grained, quartzite-like rock with a waxy, brown rind. The internal color varies from gray to brown. It occurs as scattered boulders ranging from fist size to rocks more than two feet across. It is characterized by irregular shapes, plant inclusions and root holes. Its main use in prehistoric times, in this area, was for hearths and stones to hold down tipis.

Table 1 summarizes the materials the various types of artifacts were made of. Of the 244 tools listed, 39.7 percent were made of chalcedony, 24.2 percent of chert, 11.5 percent of quartzite and 14.8 percent of silicified wood. The brown chalcedonies make up about a fourth of the total and at least half of that is definitely Knife River flint. A few of the artifacts were made of the pink, plate chalcedony from the White River Badlands. Six artifacts, not listed in the table consist of four fully grooved mauls, a grooved abrading stone, made of sandstone, and a large chopper-like tool made of Tongue River Silicified sediment.

Table 1: Materials used for artifacts.

Artifact	Chalcedony				Lithic Type						Quartzite				Total		
	Blue-gray	Pink	Tan, yellow and brown	Other	White to lt. gray	Cream to yellow	Chert	Tan, brown and dk. gray	Other	Jasper	Porcellanite	Pink, red	Gray	Other		Silicified Wood	Other
bifaces	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	1	4
bifaces, knifelike (patinated)	0	0	1	0	0	0	2	1	1	0	0	1	0	2	2	0	10
perforators	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
scrapers	0	1	0	0	0	0	1	0	0	0	1	0	2	0	1	0	12
points	13	1	0	0	2	1	0	0	1	0	0	0	0	0	0	0	5
(patinated)			25	2	7	5	10	2	7	3	3	4	4	4	14	1	101
point bases	3	0	9	1	0	1	1	0	0	0	0	0	0	0	5	0	20
(patinated)			17	1	5	3	5	1	0	2	2	3	2	5	5	1	53
point midsections	0	0	13	0	0	0	0	0	0	0	0	0	0	0	1	0	14
(patinated)			3	0	3	1	0	0	1	1	1	2	0	0	6	1	25
point tips	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	5
(patinated)			8	0	2	2	1	3	0	2	1	0	0	0	8	1	32
stemmed lunate bifaces	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	12
total	31	6	57	3	19	12	21	7	10	9	7	13	8	36	5	5	244
total patinated	3	0	31	1	0	1	1	0	0	0	0	0	0	15	1	1	53

# Identifying the Point Types

Of the 211 stone projectile points and fragments of projectile points only 141 are complete enough for use in typing the points. Included in the 141 specimens are 6 lanceolate points, 8 stemless, 21 stemmed, 47 corner-notched, and 59 side-notched points. Classification has been difficult because of the lack of access to typed collections from South Dakota and the surrounding states. Therefore typing has been based largely on comparison with types described in Special Bulletins 1 through 4 of the Oklahoma Anthropological Society, Bulletin 25 of the Texas Archaeological Society and in articles in *American Antiquity* and *Plains Anthropologist*. Where type names are used which are not in common usage in the collected area the syllable “-like” is appended to the type name. In using type names from other areas there is no intention to imply that the temporal or cultural associations of those areas apply to the collected area. The only inference intended is that the point under discussion most nearly resembles the named described type. To avoid forcing points into types liberal use of provisional forms has been made to describe those points which do not readily fit reported types.

The points are described by groups based on similar characteristics. The classifications used are summarized in Table 2 below, and the dimensions of the points are shown in Table 3 (beginning on Page 30). The nomenclature used in describing the points is the standard projectile point terminology used in the OAS Special Bulletins.

## Lanceolate Points

Only six points with lanceolate shapes were found. Two of these, Bu 162 (Figure 2a) and Bu 163 (Figure 2b) are believed to be Angostura points (Suhm, Krieger and Jelks 1954). Both specimens are basal sections. Both are narrow points tapering toward the base, both have concave bases (about 2 mm deep) and both exhibit parallel diagonal flaking. Bu 162 was made of brown chalcidony which is well patinated. The sides and base are smoothed. Bu 163 was made of a local quartzite and only the base is smoothed. Both of the points are fully flaked on both faces and the cross sections are strongly biconvex.

Two specimens fit the description of the McKean type (Bell 1958:50). Again both specimens are incomplete. Bu 1 (Figure 2c) was made of a blue-gray

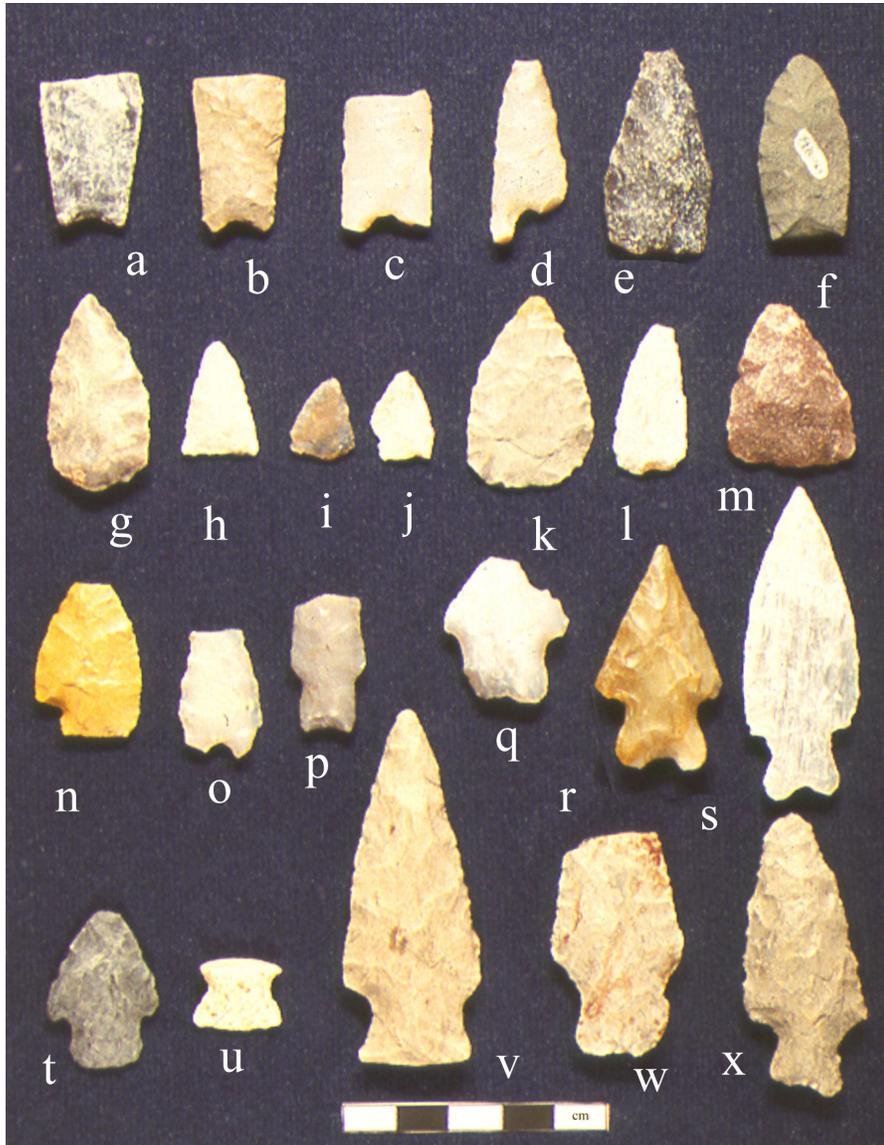


Figure 2: Lanceolate, stemless and stemmed points. Angostura: Bu 162 a, Bu 163 b. McKean: Bu 1 c, Bu 70 d. Lanceolate Form 1: Bu 26 e. Lanceolate Form 2: Bu 165 f. Catan-like: Bu 25 g. Fresno-like: Bu 178 h, Bu 190 i, Bu 191 j. Young-like: Bu 219 k. Stemless Form 1: Bu 73 l. Stemless Form 2: Bu 215 m. Stemless Form 3: Bu 153 n. Duncan: Bu 182 o, Bu 183 p. Hanna: Bu 87 q, Bu 88 r, Bu 125 s. Palmillas-like: Bu 211 t. Steuben-like: Bu 58 u, Bu 143 v. Stemmed Form 1: Bu 51 w, Bu 144 x.

Table 2: Point classification summary.

Type	Dart	Arrow
Lanceolate	Angostura McKean Forms 1 and 2	
Stemless	Catan-like Young-like Forms 2 and 3	Fresno-like Form 1?
Stemmed	Duncan Hanna Palmillas-like Steuben-like Forms 1-4 Unclassified bases	
Corner Notched	Pelican Lake Yonkee Form 7?	Scallorn-like Forms 1-6
Side Notched	Besant Big Sandy-like Godar-like Hawken Oxbow Forms 1, 3-5 Unclassified bases	Avonlea Form 2? Plains Side Notched Haskell-like Pekisko Reed-like Washita Prairie Side Notched Irvine Lewis Rounded Base Tomkins Side-Corner Notched

chalcedony and Bu 70 (Figure 2d) was made of a blue-gray to tan chalcedony. Both the tip and bits of the base are missing on Bu 1. Its cross section is planoconvex with both faces fully flaked. Bu 70 is nearly complete but the tip and bits of the base are missing. Its cross section is strongly biconvex. The basal section is not ground on either point.

Lanceolate Form 1, Bu 26 (Figure 2e), is a short (about 40 mm long), straight sided point with a tapering, straight sided section basal section about 15 mm long. The maximum width of the point is 20 mm tapering to 18 mm at the base. The base is straight but not smoothed. One edge of the base section has been smoothed but the other edge has been reworked removing any trace of the original condition. The point was made of a brown Moreau chalcedony and is slightly patinated on one face. The blade edges are slightly serrated. The general outline of the point is suggestive of the Meserve type but it does not fit the type in other respects. Alex (1984) suggested that it may be a resharpened base of a longer point, perhaps something shaped like the Hell Gap type.

Lanceolate Form 2 consists of a single artifact, Bu 165 (Figure 2f). It is a lanceolate blade with its base missing, apparently removed by an impact fracture. Without the base it is impossible to classify this specimen. It was

made of a dark gray, slate-like material which may be porcellanite. The material is softer than the quartz minerals so most of the flake scars have lost their sharpness but they seem to have a random pattern.

## Stemless Points

Eight stemless points were found. All of them are small but probably only three are arrow points.

A small, leaf-shaped point, Bu 25 (Figure 2g), fits the description of the Catan point very well (Suhm, Krieger, and Jelks 1954:410). It is rather strongly beveled on the right edge of both faces and is thick for its size. While small enough to be an arrow point its thickness and weight suggest that it could have served better as a dart point.

Three small triangular points fit the description of the Fresno point (Suhm, Krieger, and Jelks 1954 and Bell 1960:44). Specimen Bu 178 (Figure 2h) is a classic example of the type. It was made of a light gray chert, not common to the area. It is completely flaked on both faces. Bu 190 (Figure 2i) was made of a thin, triangular bit of Moreau chalcedony. The artifact is 2 mm thick and shows areas of unflaked impressions of wood grain on both faces. The edges were produced by short, steep pressure flakes on all edges of both faces. Bu 191 (Figure 2j) is a triangular point made of white chert. It is completely flaked on both faces. All three of these points were probably used for arrows.

Bu 219 (Figure 2k) fits the description of the Young point (Suhm, Krieger, and Jelks 1954:510 and Bell 1960:100). It is a thin, leaf-shaped point made from a curved flake. Two-thirds of one face is unmodified with only the distal portion flaked. The tip is slightly beveled on the left edge of both faces. It was made of a local quartzite. There are some small step fractures on the tip that suggest that it might have been used as a perforator. None of the edges seem to be smoothed.

Stemless Form 1 consists of a single specimen—Bu 73 (Figure 2l). It is a small leaf-shaped arrow point. It was made of a tan chalcedony which is heavily patinated on all surfaces. Both faces are completely flaked and the cross section is biconvex.

Stemless Form 2 also consists of a single specimen. Bu 215 (Figure 2m) is a triangular dart point made of a dark brown quartzite (Hogback quartzite). One face is largely unworked except around the edges. It resembles the Matamoros type described by Suhm, Krieger, and Jelks (1954:448) and Bell (1958:46) but lacks the beveling.

Stemless Form 3 is another one-point class. Bu 153 (Figure 2n) is a leaf-shaped point with a straight base. The maximum width of the point is about a third of the length from the base. It was made of a yellow jasper similar to that found in the Spanish Diggings area in Wyoming. Its cross section is biconvex and it is completely flaked on both faces. There is no edge smoothing. One corner of the base has a right-angled notch which appears to have been made by one stroke of the knapping tool. The character of the notch suggests that it was

the result of an accident. The tip of the point appears to have been snapped off.

## Stemmed Points

Twenty-one specimens in the collection have been classified as stemmed points. Only about half of them resemble described types so the rest have been placed in provisional groups or unclassified.

Bu 182 and Bu 183 (Figure 2o and p) have been classified as Duncan points (Perino 1971:26). Bu 182 is characterized by very weak shoulders formed by a slight narrowing of the base. The stem has a deep basal notch. The edges of the stem have been smoothed but the base was not. Both faces of the point are completely flaked and the cross section is biconvex. The tip of the point was removed by an impact fracture. It was made of a blue-gray chalcedony. Bu 183 has weak sloping shoulders and a concave base. The base was thinned by two long flakes on each face. It is a narrow, thick point with a strong, lenticular cross section. The edges of the stem were smoothed but the base was not. It was made of a dark, blue-gray chalcedony. Its tip was removed by an impact fracture also.

Three artifacts have been classified as Hanna points (Perino 1971:44). Bu 87 (Figure 2q) is the basal section of a medium-sized dart point with strong, slightly sloping shoulder, a slightly expanding stem and concave base. Portions of the sides of the stem seem to have been smoothed. It was made of a blue-gray chalcedony and is moderately patinated on one face. The tip is marred by an area of dusty quartz which may indicate that the point is a manufacturing failure. Bu 88 (Figure 2r) is a well-made point with an expanding stem and deep basal notch. The basal corners are rounded and the sides of the stem and the base have been smoothed. It is a thick, triangular dart point with a very sharp tip. It was made of a yellowish Moreau chalcedony and is fully flaked on both faces. The cross section is strongly lenticular. The edges of the blade appear to be worn as though the artifact had been used as a knife. Bu 125 (Figure 2s) is a beautifully made, long, leaf-shaped point made of a translucent white to tan Moreau chalcedony that is strongly patinated on one face and moderately patinated on the other. The corners of the stem are rounded and the edges of the stem are slightly smoothed.

Bu 211 (Figure 2t) is a small, triangular dart point with slightly barbed, wide shoulder and bulbous stem. It best fits the description of the Palmillas points (Suhm, Krieger, and Jelks 1954:462 and Bell 1960:74), but is slightly smaller than the minimum length given in the type descriptions. Frison (1979:10 and 1978:225) reports similarly shaped points from the Kobold site but does not assign a type name to them. It was made of dark gray porcellanite.

A large quartzite dart point, Bu 143 (Figure 2v), fits the description of the Steuben point (Perino 1968:94) very well. It is a long triangular point with a slightly expanding stem with well-defined sloping shoulders and a very slightly convex base. The base is smoothed. One edge of the blade is slightly convex

and the other is straight. Both edges are abraded as though the tool had been used as a knife. Stem Bu 58 (Figure 2u) was snapped off at the shoulder line and not enough remains to classify but the shape is suggestive of the Steuben type.

Two points were placed in Stemmed Form 1. They are medium-sized dart points with strong square to strong sloping shoulders, expanding stems, and concave bases. Bu 51 (Figure 2w) is well made of a local reddish-gray quartzite. The stem is not ground. Bu 144 (Figure 2x) is a slender triangular point made of a miserable gray quartzite which is probably of local origin. It has a planoconvex cross section and the flat side has a large portion of the original flake surface remaining unknapped. The stem is asymmetrical with one “ear” longer than the other. The stem is smoothed on the edges and on the base.

Three small points—perhaps arrow points—were placed in Stemmed Form 2. All three are basal sections of triangular points with short square stems which are about half the width at the shoulders. The shoulders are square to slightly barbed. Bu 119 (Figure 3a) was made of a blue-gray chalcedony. The stem is damaged so the shape of the base cannot be determined but the edges of the stem appear to have been smoothed. An impact removed the tip. Bu 126 (Figure 3b) is essentially unifacial with only a little marginal flaking on the unworked side. It was made of a gray quartzite (Hogback quartzite). The stem edges and the base are unsmoothed. The base is indented with two convex curves giving it a fishtail outline. Bu 188 (Figure 3c) was made of a gray to yellow chert. The edges of the stem were smoothed but the base is too damaged to determine its shape or if it had been smoothed.

Stemmed Form 3 consists of single point, Bu 74 (Figure 3d). It is a medium-sized dart point with a broad, triangular blade. It has an expanding stem and a straight base with a notch in the center. The shoulders are strong and slightly barbed. The outer basal corners are rounded but squarish at the notch. It was made of a brown chalcedony (Knife River Flint) and is moderately patinated on one face and on part of the break at the tip. If the base did not have the notch it would fit the description of the Ellis type (Bell 1960:32) nicely.

Stemmed Form 4 also consists of a single specimen, Bu 159 (Figure 3e). It is a narrow, thick point with light beveling on the right edges of the blade. Its cross section is strongly lenticular with a tendency toward a rhomboidal shape where the beveling is strongest. The base has been damaged but it was probably straight. There is a slight narrowing on one edge of the stem about 10 mm from the base, and there is a broad, shallow notch on the other edge for the stem extending from about 4 mm from the base to 10 mm from the base. The net effect is to give the appearance of a slightly expanding stem. Neither the base nor the notch is smoothed. It was made of a tan chalcedony which may be Moreau chalcedony. The flaking pattern is random. Several things suggest this may be a Pryor Stemmed point (Frison and Gray 1978) but the shape of the base and the lack of grinding on the stem argue against that classification.

Six stemmed bases were not classified. They were made of the following materials:



Figure 3: Stemmed and corner-notched points. Stemmed Form 2: Bu 119 a, Bu 126 b, Bu 188 c. Stemmed Form 3: Bu 74 d. Stemmed Form 4: Bu 159 e. Unclassified stems: Bu 23 f, Bu 60 g, Bu 72 h, Bu 93 i, Bu 133 j, Bu 187 k. Pelican Lake: Bu 4 l, Bu 13 m, Bu 30 n, Bu 36 o, Bu 41 p, Bu 46 q, Bu 57 r, Bu 89 s, Bu 90 t, Bu 135 u.

Bu 23	Brown silicified wood	Crude work
Bu 60	Cream colored Minnelusa chert	Edges and base smoothed
Bu 72	Brown Moreau chalcedony	
Bu 93	Milky Moreau chalcedony	Edges and base smoothed
Bu 133	Blue-gray Moreau chalcedony	Edges smoothed
Bu 187	Brown chalcedony	Edges and base smoothed

Bu 23 (Figure 3f) is the base of a crudely chipped moderate to large-sized dart point. The shoulders are strongly sloping and are fairly broad. The fracture that separated the base from the rest of the point has some of the characteristics of an impact fracture but the pattern is complicated by the structure of the silicified wood.

Bu 60 (Figure 3g) is a broad, expanding basal section of a large dart point. The base is strongly convex and all edges of the stem have been smoothed. The base was separated from the blade by an impact fracture.

Bu 72 (Figure 3h) is a narrow, expanding stem of a small dart point. It has a convex base and none of the stem edges appear smoothed. The shoulders are square with just a suggestion of a barb. The small size and the suggestion of a barb prevented this base from being included with the Steuben-like points. The base is interesting because the layers of the silicified wood are indicated by patinated layers.

Bu 93 (Figure 3i) is a well-made, broad, square-shouldered base of a small dart point with a straight stem which has a straight base. Although somewhat obscured by heavy patination, the flaking appears to be transverse parallel. The base strongly resembles those shown on the Scottsbluff point described by Wormington (1957:276 Type II) and especially like those illustrated by Frison (1978:Figure 5.23 c and d).

Bu 133 (Figure 3j) is the basal section of a large artifact which may have been a projectile point or a knife. It has only a suggestion of shoulders and has an expanding stem with a concave base. The edges of the stem are smoothed but the base is not. It was made of a tan to blue-gray Moreau chalcedony. It resembles the base of Example E of the Benton spearpoint described by Bell (1960:6).

Bu 187 (Figure 3k) is a slightly expanding stem of a small dart point. The base is slightly convex with rounded corners and small, shallow, off-center basal notch. All edges of the stem are smoothed. The stone is heavily patinated on all surfaces, even on the fracture at the distal end. The point was terminated by a complex fracture which was probably caused by an impact.

## Corner-Notched Points

Forty-seven projectile points are considered to be corner-notched. This was a difficult group to classify because there were so few named type descriptions for corner-notched points from that area. Consequently, 21 of the 47 points

were placed in provisional groups. About 20 of the points are dart points and the rest are arrow points.

The largest group of points fit the description of the Pelican Lake type (Perino 1971:72). Most of the points in this group are medium-sized triangular dart points with square to well barbed shoulders and straight to convex bases. Because the type description gave no information on dimensions, the assignments to this class are a little tentative. Fourteen points were assigned to this type.

Bu 4 (Figure 3l) is the basal section of a medium-sized Pelican Lake dart point. Its base is straight and the shoulders are slightly barbed. The point was made of a blue-gray chalcedony. The base was separated from the blade by an impact fracture.

Bu 13 (Figure 3m) is a broad, triangular point with strong barbs and a broad convex base. The base and notches are not smoothed. It was made of a tan chalcedony and is slightly patinated on one face.

Bu 30 (Figure 3n) is a leaf-shaped point with one square shoulder and one slightly barbed shoulder. The notches are broad and open U-shaped forming an expanding stem with a convex base. The base notches are not smoothed. The point is very blunt, probably as the result of repairing some sort of fracture that removed the original tip. The point was made of a yellowish-tan quartzite (Hogback quartzite).

Bu 36 (Figure 3o) was found in two pieces. It is a triangular point that probably had square shoulders and a straight base. It was made of a blue-gray chalcedony.

Bu 41 (Figure 3p) is a beautifully made, large, triangular dart point with strong barbs and a broad slightly convex base. One face is completely flaked and the other only partially flaked. The unworked area is slightly patinated. It was made of a blue-gray chalcedony. The base and notches are smoothed.

Bu 46 (Figure 3q) is the basal section of a small triangular dart point with small notches and slightly barbed shoulders. The base is broad and very slightly convex. The base and notches are smoothed. It was made of a light gray, medium to fine-grained quartzite. The base was probably separated from the blade by a snap fracture.

Bu 57 (Figure 3r) is a broad triangular point with strong barbs and a straight base. The base and notches are not smoothed. It has the appearance of a short, fat Christmas tree. It is small enough to be an arrow point but because of its width it was included with the Pelican lake points. Its appearance is very much like the Pelican lake points illustrated by Beckes and Keyser (1983:88 Figure 41) and by Frison (1978:219 Figure 5.40i). It was made of a blue-gray chalcedony.

Bu 89 (Figure 3s) is medium-sized dart point with straight edges, light barbs and a straight base. The base and the notches are lightly smoothed. The tip was snapped off. It was made of an excellent quality brown chalcedony, probably Knife River flint.

Bu 90 (Figure 3t) is the basal section of a dart point made of yellow, dendritic jasper similar to that found in the Spanish Diggings area in Wyoming. One face of the blade is patinated. The base is very slightly concave and both the base

and the notches are smoothed.

Bu 135 (Figure 3u) is another beautifully made, long triangular dart point with a convex base. The base and the notches are smoothed. It was made of a brown Moreau chalcedony and is lightly patinated on one face of the blade and moderately patinated on the other. The tip was probably removed by an impact fracture and the fracture is patinated too.

Bu 140 (Figure 4a) is a broad, triangular, small dart point with slightly barbed shoulders and a concave base. The base and notches are smoothed. It was made of brown chalcedony which is extremely heavily patinated on one face and heavily patinated on the other. The tip has been removed by an impact fracture and the fracture is not patinated.

Hn 3 (Figure 4b) is a medium-sized dart point with slightly convex edges, slightly barbed shoulders and straight base with rounded corners. Its tip is extremely sharp. The base and notches are smoothed. It is well made of a fine-grained brown quartzite.

Hn 4 (Figure 4c) is the basal section of a triangular dart point with slightly barbed shoulders and a slightly concave base. The base and notches are well smoothed. A snap fracture separated the blade from the base. The point was made from a black flint which has a dull luster (perhaps this is a dark variety of porcellanite).

Hn 3 and Hn 4 are the only two projectile points in the collection that were excavated. They were dug from a midden on the Ledger Ranch in the Short Pine Hills in Harding County, about 8 to 12 miles northwest of Redig, S.D. The midden was on the edge of a small, poorly defined drainage channel and about 8 feet below the normal ground surface. This may be the Thomas Creek site, 39HN2. I was taken to the site by Mr. Dale Kingsbury of Vale, S.D. in 1938 or 1939. I remember that he said he had taken W.H. Over to the site earlier and that Mr. Over had done some work there.

Pn 1 (Figure 4d) is a small, triangular dart point with square shoulders and a straight base with rounded corners. The notches are well smoothed and the base is lightly smoothed. The point was made of a medium-grained gray quartzite (Hogback quartzite). It was found on the east side of Smelter Hill on the School of Mines campus in Rapid City, S.D.

Ten corner-notched points were typed as Scallorn-like (Bell 1960:58). Three other points, less Scallorn-like, were placed in Corner-Notched Form 4 and three additional points, somewhat more Scallorn-like, were placed in Corner-Notched Form 6 for reasons that will be discussed later. A "lumper" could squeeze all six of these points into the Scallorn type but a little "splitting" seems justified for discussion purposes.

Hn 2 (Figure 4n) is the basal section of a small, triangular point with a straight base. The barbs are damaged but it is likely that the point had strong barbs. The base is unsmoothed but the notches are smoothed. The tip has been removed by an impact fracture. It was made of a tan, banded chert (perhaps Pahasapa chert).

Bu 7 (Figure 4e) is a small, triangular arrow point with a straight base and the traditional "Christmas-tree" shape of the Scallorn point. The blade edges



Figure 4: Corner-notched points. Pelican Lake: Bu 140 a, Hn 3 b, Hn 4 c, Pn 1 d. Scallorn-like: Bu 7 e, Bu 9 f, Bu 20 g, Bu 22 h, Bu 45 i, Bu 47 j, Bu 62 k, Bu 134 l, Bu 189 m, Hn 2 n. Yonkee: Bu 68 o, Bu 117 p, Bu 136 q. Corner Notched Form 1: Bu 31 r, Bu 44 s, Bu 113 t, Bu 151 u, Bu 184 v, Bu 212 w.

are slightly serrated. The base is unsmoothed but the notches are smoothed. It was made of a chocolate brown jasper. It was the only artifact found on the 240 acre “desert claim” portion of the L. Flaigg ranch.

Bu 9 (Figure 4f) is the remnant of a triangular point that has an impact fracture from the tip to one notch. The base is straight. Both the base and the notches are unsmoothed. It was made of a gray porcellanite.

Bu 20 (Figure 4g) is the basal portion of a triangular point with strong, unequal barbs and a straight base. One blade edge is slightly recurved and the other is convex. The base and notches are smoothed. It was made of a tan, waxy chert (Minnelusa chert).

Bu 22 (Figure 4h) is a long, slender triangular point with broad, open notches and a convex base. The base and notches are smoothed. It was made of brown chalcedony and is lightly patinated all over, even on the broken tip. The tip was removed by an impact fracture.

Bu 45 (Figure 4i) is a small, triangular arrow point with slightly convex edges and a short rounded stem. It has strong, almost right-angled shoulders. It is thick for its size and this suggests that it may have been resharpened. It was made of a yellow jasper similar to material from the Spanish Diggings area in Wyoming.

Bu 47 (Figure 4j) is a small, triangular point with broad notches and a convex base. It is uncharacteristically thick for its size and is probably the remnant of a longer point that has been resharpened. The base is unsmoothed but the notches are smoothed. It was made of a tan chalcedony and is heavily patinated on all the unbroken surfaces. The tip was removed by an impact fracture.

Bu 62 (Figure 4k) is a triangular arrow point with a narrow, expanding stem and a straight base. The shoulders are strongly barbed. The base and notches are unsmoothed. It was made of a blue-gray chalcedony.

Bu 134 (Figure 4l) is very much like Bu 62 but was made of a cream colored, waxy chert (Minnelusa chert).

Bu 189 (Figure 4n) is a much-resharpened remnant of a small triangular arrow point with wide, square shoulders. The stem has a narrow neck and straight, expanding edges. The base is straight. Both the base and the notches are smoothed. It was made of a cream-colored, waxy chert (Minnelusa chert).

Three medium-sized points have been typed as Yonkee points (Bentzen 1962:113-118). Bu 68 (Figure 4o) is the basal section of a broad point with strong, almost square shoulders and a concave base. The notches are broad, rounded Vees and are smoothed as is the base. It was made of a light brown chalcedony and is heavily patinated on one face and lightly patinated on the other. The fracture surface at the tip is not patinated. A snap fracture removed the tip.

Bu 117 (Figure 4p) is the basal section of a triangular dart point with corner notches so broad that the base appears to be a short, expanding stem with a basal notch. The stem is about half as wide as the shoulders. The stem edges and the base are well smoothed. It was made of a brown chalcedony and is patinated on all surfaces including the break at the tip. The break was caused by a snap fracture.

Bu 136 (Figure 4q) has small, square shoulders, an expanding stem and a double convex (fishtail) base. The base and the notches are smoothed. It was made of a tan chert that is lightly patinated. The tip has been removed by an impact fracture.

Six small arrow points were placed in Corner-Notched Form 1. They are characterized by short, broad triangular blades and by small corner notches placed near the base. The haft lengths range from 2 to 5 mm. The bases are broad (50 to 75% of the maximum width of the points) and are straight or very nearly straight. Most of the bases are unsmoothed. They were made of the following materials:

Bu 31 (Figure 4r)	Cream-colored Minnelusa chert
Bu 44 (Figure 4s)	Blue-gray chalcedony
Bu 113 (Figure 4t)	Yellow jasper (Spanish Diggings?)
Bu 151 (Figure 4u)	White River Badlands pink chalcedony
Bu 184 (Figure 4v)	Gray quartzite
Bu 212 (Figure 4w)	Blue-gray Moreau chalcedony

Bu 31 and 44 were terminated by impact fractures and Bu 212 by a snap fracture.

Corner-Notched Form 2 includes two long, slender, thin arrow points with small, right angled or slightly barbed shoulders. The notches are small and close to the bases which are slightly convex. The base of Bu 180 (Figure 5a) is unsmoothed, but the base of Bu 186 (Figure 5b) is damaged so the original shape is unknown. Bu 180 was made of a tan to yellowish Moreau chalcedony. The tip has been removed by an impact fracture. Bu 186 was made of cream-colored Minnelusa chert. One edge of the blade has been reworked from a point about 12 mm from the base to the tip resulting in the narrowing of the blade about 1 mm in that area. The tip appears to have been removed by a twisting fracture and the base is damaged by an impact fracture.

Corner-Notched Form 3 consists of three small, triangular arrow points with bases formed by double convex curves (fishtail bases). The notches are wide and shallow resulting in short, broad, expanding stems. The shoulders are small and gently sloping. The bases and notches are not smoothed. They are made of the following materials:

Bu 3 (Figure 5c)	Yellow jasper (Spanish Diggings?)
Bu 100 (Figure 5d)	White, waxy chert (Minnelusa)
Bu 101 (Figure 5e)	Cream-colored, waxy chert (Minnelusa)

The edges of Bu 3 and Bu 101 are straight but Bu 100 has one slightly convex edge and one recurved edge. The blade edges of Bu 100 are characterized by numerous small step fractures indicating that it may have been used for something other than a projectile point. The tips of Bu 3 and Bu 101 have been removed by impact fractures.

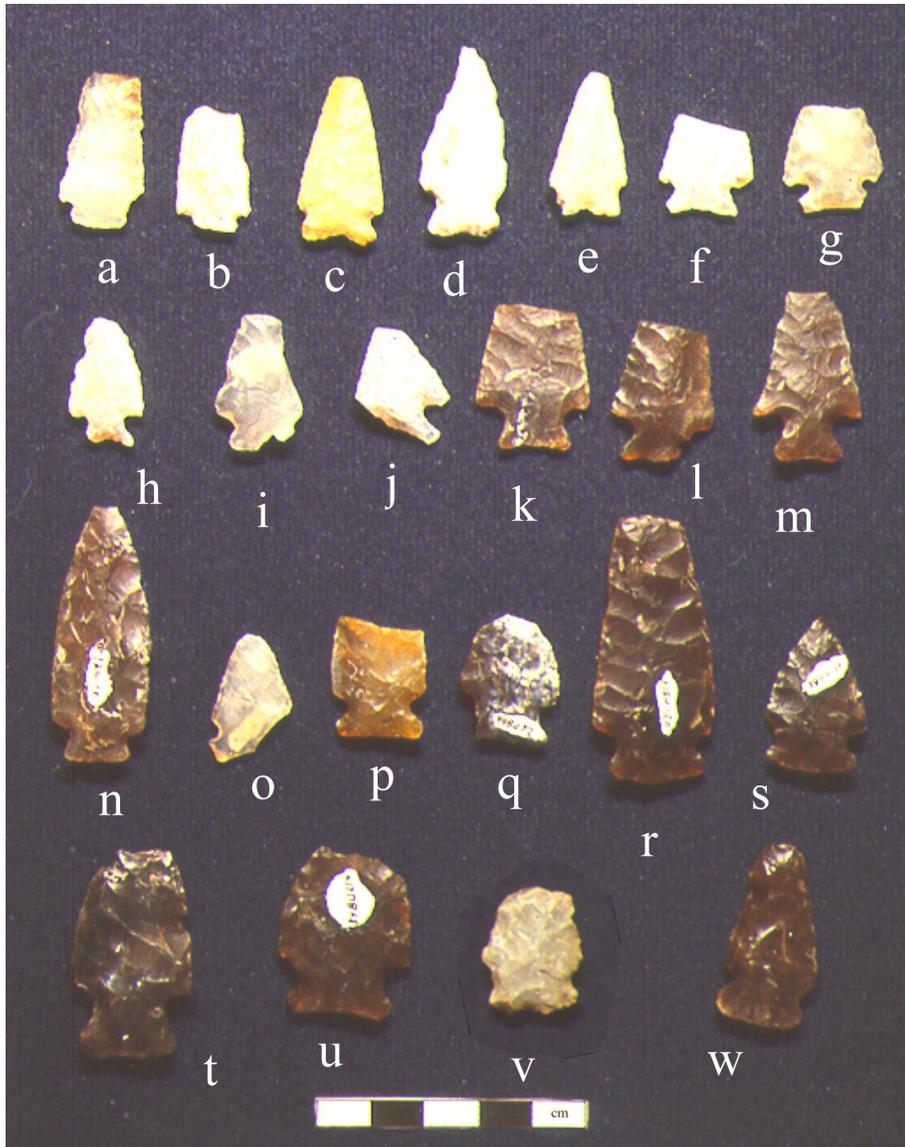


Figure 5: Corner and side-notched points. Corner-notched Form 2: Bu 180 a, Bu 186 b. Corner-notched Form 3: Bu 3 c, Bu 100 d, Bu 101 e. Corner-notched Form 4: Bu 24 f, Bu 91 g, Bu 122 h. Corner-notched Form 5: Bu 179 i, Bu 185 j. Corner-notched Form 6: Bu 43 k, Bu 64 l, Bu 81 m. Corner-notched Form 7: Bu 75 n. Avonlea: Bu 176 o. Besant: Bu 52 p, Bu 77 q, Bu 120 r, Bu 139 s, Bu 150 t, Bu 214 u, Bu 218 v, Hn 1 w.

Corner-Notched Form 4 includes three, small triangular arrow points characterized by small notches near the base and by broad concave bases. The shoulders are square to slightly barbed. The bases are unsmoothed. They are made of the following materials:

Bu 24 (Figure 5f)	Light tan Moreau chalcedony
Bu 91 (Figure 5g)	Light tan chalcedony
Bu 122 (Figure 5h)	Light tan chalcedony

Bu 24 is moderately patinated on one face and the break at the tip and lightly patinated on the other face. Bu 122 is moderately patinated on all surfaces. All three points have been terminated by impact fractures. As mentioned before, these points could be considered Scallorn-like but it was decided that the short, broad necks justified putting them in a provisional class for the purpose of discussion.

The Corner-Notched Form 5 group consists of two points, Bu 179 and 185 (Figures 5i and j). They are small, triangular arrow points characterized by broad, fairly deep notches and slightly convex bases. The shoulders vary from slightly sloping to lightly barbed. Both were made of blue-gray chalcedony and both were terminated by impact fractures.

Corner-Notched Form 6 includes three points, Bu 43, 64 and 81 (Figures 5k, l, and m), which look as if they were all made by the same knapper. They are triangular arrow points with broad, square to slightly barbed shoulders, with broad notches and with slightly concave bases. The base widths vary from 62 to 79 percent of the shoulder width and the neck width varies from 45 to 53 percent of the shoulder width. The bases are thinned by one or two broad flakes on each face. The edges of Bu 43 and 64 are straight but the edges of Bu 81 have been reworked near the tip. All three points were made of brown chalcedony, probably Knife River flint. Bu 43 and 64 were terminated by snap fractures and Bu 81 was terminated by an impact fracture. These points are very Scallorn-like but it was felt that the basal configurations and the basal thinning justified putting them in a separate group.

Corner-Notched Form 7 consists of a single point, Bu 75 (Figure 5n). It is a medium-sized, slender, leaf-shaped dart point. It has uneven corner notches forming a short, slightly expanding stem with a straight base. The shoulders are slightly sloping. The base width is about half the maximum width of the blade. The base and notches are smoothed. The plane of the base is rotated about 10° clockwise from the plane of the blade. The point was made of brown chalcedony, probably Knife River flint.

## Side-Notched Points

Side notched points constitute the largest group in the collection, totaling 59 points. They are about equally divided between dart and arrow points. About

a third of them had to be placed in provisional or unclassified groups. They are described in alphabetical order.

Bu 176 (Figure 5o) was classified as an Avonlea point (Keyhoe 1976:179-188). It is a small, thin triangular point with shallow U-shaped notches, rounded corners and concave base. The base is wider than the blade and is smoothed. It was made of a blue-gray chalcedony.

Besant points (Perino 1971:8) are the largest group of the side notched points. Seven of the eight points in this group were made of brown chalcedony, probably Knife River flint.

Bu 52 (Figure 5p) is the base of a medium-sized point with slightly sloping shoulders, shallow U-shaped notches and a straight base. The base and notches are smoothed. It was terminated by an impact fracture.

Bu 77 (Figure 5q) is a stubby, leaf-shaped point with slightly sloping shoulders, broad notches and a concave base. The notches are smoothed but the base is not. The tip was removed by a complex impact fracture. The point is lightly patinated, even on the fractured surfaces.

Bu 120 (Figure 5r) is a long, narrow triangular point with one square and one sloping shoulder and a convex base. Neither the base nor the notches are smoothed. The point was terminated by an impact fracture and an attempt was made to resharpen it.

Bu 139 (Figure 5s) is a short, broad triangular point with convex edges, unequal, sloping shoulders and a broad convex base. One notch and the base are smoothed.

Bu 150 (Figure 5t) is a medium-sized triangular point with convex edges, very broad notches forming a long stem, and a base with rounded corners and a straight base. An impact shattered the tip of the point.

Bu 214 (Figure 5u) is a medium-sized dart point with broad notches, squared shoulders and a concave base. Overall, it has the shape of a short, broad leaf. The notches and the base are smoothed. The tip was probably removed by an impact fracture but it has been slightly reworked.

Bu 218 (Figure 5v) is the basal section of a projectile point that was probably triangular in shape with a convex base. The notches are smoothed but there is too much damage to the base to tell if it had been smoothed. An impact was probably responsible for the removal of the tip. This is the only specimen in the Besant group that was not made of brown chalcedony, it was made of gray chert.

Hn 1 (Figure 5w) was found in a plowed field about a quarter of a mile east of Crow Butte in Harding County, S.D. It is a narrow, thick triangular point with sloping shoulders and a convex base. The base and notches are smoothed. It is a small copy of Bu 120. A large portion of one face is unworked and the artifact has some of the curvature of the original flake.

Two specimens were called Big Sandy-like (Bell 1960:8). They are Bu 27 and Bu 29 (Figures 6a and b). They are characterized by square shoulders, large U-shaped notches close to the base and a base that is concave with squared shoulders. The base and notches are smoothed. Bu 27 was made of a tan

Moreau chalcedony. Bu 29 was made of a brown chalcedony and is heavily patinated. Both points were terminated by impact fractures.

Bu 48 (Figure 6c) was typed as Godar-like (Perino 1971:38). It is a short, broad point or knife made of brown chalcedony (Knife River flint). Its notches are U-shaped and close to the base. The base is straight and almost as wide as the blade. Both the notches and the base are smoothed. Both edges of the blade are very worn suggesting that it was used for cutting rather than as a projectile point.

Bu 54 (Figure 6d) is believed to be a Hawken point (Frison, Wilson and Wilson 1976:28-57). It is a medium-sized dart point with convex edges, broad shallow notches and a slightly concave base. The base has been thinned by the removal of a couple of flute-like flakes on one face and by beveling on the other face. The notches and the base are smoothed. It was made of a red and yellow jasper.

Two small to medium-sized points have been classified as Oxbow points (Perino 1971:68). They are Bu 39 and 166 (Figure 6e and f). They have concave bases, shallow side notches and sloping shoulders. The general appearance is that of a stubby leaf with an “eared” base. Both the notches and the base on Bu 39 are smoothed and at least the notches are smoothed on Bu 166. Bu 39 was made of a tan chalcedony and Bu 166 was made of a brown chalcedony that is lightly patinated all over.

Nine specimens have been classed as Plains Side-Notched points (Keyhoe 1966). Eight of them are probably arrow points and one is borderline in size. These points are characterized by sharp angles at the base and at the notches. The notches are small, deep and narrow and located fairly high on the blade. The bases are as wide or wider than the proximal end of the blade. Type names used for points from the Southern Plains have been used to describe two groups of these points.

Bu 8 (Figure 6g) is a Haskell-like point (Perino 1968:32). It is a small triangular point with a wide, concave base. It was made of a dark gray quartzite.

Bu 130 (Figure 6h) is classified as a Pekisko point (Keyhoe 1966:832). The dimensions of this specimen are at the upper limits for the type but it is still the best fit. The notches are smoothed but the base is not. It was made of a blue-gray chalcedony and is patinated.

Four small arrow points are classed as Reed-like (Bell 1958:76). The points have narrow, rectangular notches placed close to the base. The notches are usually deeper than they are wide. Bases on half the points are smoothed. The materials used were:

Bu 33 (Figure 6i)	White Minnelusa chert
Bu 35 (Figure 6j)	Tan Minnelusa chert
Bu 42 (Figure 6k)	Light brown chalcedony, heavily patinated
Bu 85 (Figure 6l)	Dark gray chert

Three specimens were typed as Washita points (Bell 1958:98). Bu 53 (Figure 6m) is very thin triangular point made of white Moreau chalcedony. The grain of



Figure 6: Side-notched points. Big Sandy-like: Bu 27 a, Bu 29 b. Godar-like: Bu 48 c. Hawken: Bu 54 d. Oxbow: Bu 39 e, Bu 166 f. Plains Side Notched: (Haskell-like) Bu 8 g, (Pekisko) Bu 130 h, (Reed-like) Bu 33 i, Bu 35 j, Bu 42 k, Bu 85 l, (Washita) Bu 53 m, Bu 141 n, Bu 169 o. Prairie Side Notched: (Irvine) Bu 5 p, Bu 12 q, Bu 217 r, (Lewis Rounded Base) Bu 82 s, Sh 2 t.

the wood is at an angle of about 45 to the long axis of the point. Bu 141 (Figure 6n) is another very thin triangular point with narrow, rectangular notches. The notches are different distances from the base. It was made of gray porcellanite. Bu 169 (Figure 6o) is a unifacial spall from a nodule of Tongue River silicified sediment that has been minimally shaped to resemble the base of a Washita point. It could be accidental.

Ten points fall in the Prairie Side-Notched system described by Keyhoe (1966).

Three of these were typed as the Irvine variety which is characterized by large, wide, shallow V- to U-shaped notches low on the blade. Generally the corners of the base are more angular than the Prairie group normally exhibits. Bu 5 (Figure 6p) was the first point I found and the only projectile point found in association with a tipi ring site. It was not in association with any of the feature of the site. It is a small, leaf-shaped point that is beveled on the left edges of both faces. The base and notches are smoothed. It was made of a brown chalcedony that is heavily patinated. Bu 12 (Figure 6q) is very similar to Bu 5 in size and shape, but the base is very slightly wider than the shoulders. It was made of white chert. Bu 217 (Figure 6r) is a crude point made of a yellowish brown quartzite (perhaps Hogback quartzite). The base and notches are smooth. The tip and a portion of one edge of the blade have been removed by an impact fracture.

Two points were considered to be of the Lewis Narrow Rounded Base type. They are Bu 82 and Sh 2 (Figures 6s and t). Bu 82 has a well rounded base with smoothed notches and an unsmoothed base. It was made of a red quartzite. Sh 2 has well smoothed notches and a base that is slightly notched caused by the removal of a deep flake from one face. It was made of a tan chert (Pahasapa chert). The tip has been damaged by an impact fracture.

Four specimens fit the description of the Tompkins Side/Corner-Notched point. These points have wide V-shaped notches that impinge upon the base giving it a sharp corner while the other side of the notch forms a square to sloping shoulder with the blade. The bases are convex and as wide or nearly as wide as the proximal end of the blade. They are made of the following materials:

Bu 56 (Figure 7a)	Brown chalcedony, patinated all over
Bu 114 (Figure 7b)	Brown chalcedony, patinated all over
Bu 181 (Figure 7c)	Blue-gray chalcedony, patinated
Bu 251 (Figure 7d)	Cream-colored chert

The fractures terminating Bu 56 and 251 are probably snap fractures.

A single specimen, Bu 34 (Figure 7e), is considered to be the base of a Swift Current Fishtail point, however this is a very tentative classification as most of the point is missing. The notches are smoothed but the base is not. It was made of a tan, waxy chert, probably Minnelusa chert. It was terminated by an impact fracture.

Side-Notched Form 1 consists of a single point, Bu 227 (Figure 7f). It is a crude biface made of brown Moreau chalcedony. Practically all of the knapping



Figure 7: Side-notched points. Prairie Side Notched: (Tompkins Side/Corner Notched) Bu 56 a, Bu 114 b, Bu 181 c, Bu 251 d, (Swift Current) Bu 34 e. Side-notched Form 1: Bu 227 f. Side-notched Form 2: Bu 19 g, Bu 37 h, Bu 76 i, Bu 83 j, Bu 97 k, Bu 121 l. Side-notched Form 3: Bu 15 m, Bu 32 n, Bu 50 o. Side-notched Form 4: Bu 14 p, Bu 38 q, Bu 108 r. Side-notched Form 5: Bu 71 s. Unclassified bases: Bu 2 t, Bu 40 u, Bu 59 v.

was done by percussion methods with only a little bit of pressure flaking at the notches and trimming of the base. It has the appearance of a preform but the notches and wear on both edges of the blade indicate that the artifact probably was used for cutting rather than just being a preform.

Side-Notched Form 2 consists of six points. Generally, they are triangular with very shallow side notches placed close to the base. The bases are nearly as wide or slightly wider than the proximal ends of the blades and five of the bases are concave and one is straight. The bases and notches are unground. They are made of the following materials:

Bu 19 (Figure 7g)	Pink chert (Minnelusa chert)
Bu 37 (Figure 7h)	White chert (Minnelusa chert)
Bu 76 (Figure 7i)	Fine-grained, tan quartzite (local)
Bu 83 (Figure 7j)	Yellow Moreau chalcedony
Bu 97 (Figure 7k)	Brown chalcedony (Knife River flint)
Bu 121 (Figure 7l)	Tan chert

The shapes of these points are all suggestive of the Avonlea type but they are all thicker than 4 mm. Bu 9 is especially thick and the workmanship is poor but the rest are only a mm or so thicker than 4 mm and the workmanship is acceptable. Bu 37 and 121 are damaged by impact fractures and Bu 83 by a snap fracture.

Three points, very similar in appearance and workmanship, were placed in Side Notch Form 3. They are medium sized projectile points characterized by a leaf-shaped blade and small, U-shaped notches placed close to the base. The bases are all concave and nearly as wide as the shoulder widths. The bases and notches are smoothed. All three were made by percussion methods taking broad parallel to parallel oblique flakes to fully shape both faces with pressure flaking used to trim and dress the edges. All three have biconvex cross sections and all three are well made. They are made of the following materials:

Bu 15 (Figure 7m)	Pink and gray chert (Minnelusa chert)
Bu 32 (Figure 7n)	White chert, patinated
Bu 50 (Figure 7o)	Blue-gray chalcedony, patinated

Bu 32 and 50 appear to have been shortened by impact fractures while Bu 15 probably was shortened by a snap fracture. The Hawken point, Bu 54, seems to be closely related to these points but the notches of the Form 3 points are much better defined.

Side Notch Form 4 consists of three points, generally triangular in shape, with concave bases, and with small V- U-shaped notches close to the base. The bases are wider than the blades. Both the bases and the notches are smoothed. Bu 14 and 108 (Figure 7p and r) are made of brown chalcedony and Bu 38 (Figure 7q) is made of a fine-grained, mottled brown quartzite. The workmanship on the quartzite point is excellent.

Side Notch Form 5 consists of a single specimen, Bu 71 (Figure 7s), that looks like a big Washita point. It is a medium-sized triangular point with slightly convex edges, deep, narrow notches about 7 mm above the base, and a deep concave base with a small shallow U-shaped notch in the base. The base and the notches are unsmoothed. It was made of brown chalcedony and the workmanship is beautiful. Frison (1978:211 Figure 5.32 c-d) reports similar shaped points from Scoggins site, a Middle Plains Archaic site in south central Wyoming.

Eleven side notched bases were considered to be too fragmentary for any meaningful classification. They are listed under Unclassified Bases. The sizes and shapes are recorded in the table of dimensions and in the illustrations. They are made of the following materials:

Bu 2 (Figure 7t)	Blue-gray Moreau chalcedony. Base ground
Bu 40 (Figure 7u)	Blue-gray chalcedony. Base and notches smoothed
Bu 59 (Figure 7v)	Brown chalcedony (KRF). Base and notches smoothed
Bu 65 (Figure 8a)	Bwn. chalcedony, patinated. Base and notches smoothed
Bu 80 (Figure 8b)	White chert. Base and notches smoothed
Bu 103 (Figure 8c)	Tan chalcedony, patinated. Base and notches smoothed
Bu 112 (Figure 8d)	Brown chalcedony, patinated. Base and notches smoothed
Bu 123 (Figure 8e)	Porcellanite?
Bu 129 (Figure 8f)	Gray quartzite, local. Base and notches smoothed
Bu 145 (Figure 8g)	White chert, fire crazed. Base ground
Bu 213 (Figure 8h)	Red jasper. Base and notches smoothed

Bu 2, 65, and 80 have base shapes like those of the Bitterroot or Hawken types as illustrated by Beckes and Keyser (1983:88 Figure 4a). Bu 40 is strongly beveled on the right edges and was probably not a projectile point. The blade edges show a lot of wear so this may be the haft of a knife. Bu 59 resembles the bases of the Hemphill type (Perino 1972:50). The fractured end seems to have been modified as though the basal section was used as a scraper. Bu 103 resembles the bases on the points illustrated by Frison (1978:72) from Late Prehistoric sites. Bu 123 is probably the base of some Plains Side-Notched type and Bu 129 is probably the base of some Prairie Side-Notched type. Bu 145 has a base wider than the shoulder and it resembles the Nanton Wide Rounded Base type described by Keyhoe (1960:831-2). Bu 213 is probably the base of a small dart point.

## Miscellaneous Points

Of the 32 tips, 25 midsections and 20 fragmented points and basal sections there are four that deserve mention.



Figure 8: Side-notched, miscellaneous, and metal points. Side-notched (unclassified bases): Bu 65 a, Bu 80 b, Bu 103 c, Bu 112 d, Bu 123 e, Bu 129 f, Bu 145 g, Bu 213 h. Miscellaneous: Bu 61 i, Bu 99 j, Bu 102 k, Bu 175 l. Metal: Bu 237 m, Bu 238 n, Bu 239 o, Bu 240 p.

Bu 61 (Figure 8i) is a tip segment 42 mm long, 31 mm wide and 7 mm thick. The material is a pink chert. It is beveled on the left edge of both faces indicating that it may be the end of a four-bevel knife. The broken surface seems to be a snap fracture.

Bu 102 (Figure 8k) is a long, slender fragment of a tip that is knapped in the same manner as the points in Side Notch Form 3. The tip is 43 mm long, 22 mm wide, and 5 mm thick. It is beveled on the left edge of both faces and the blade edges show lots of wear. It was made of a blue-gray Moreau chalcedony.

Bu 99 (Figure 8j) is a fragment of a projectile point with the tip and the base damaged. The indentations on the base suggest that the artifact is a McKean Lanceolate point. The fracture on the tip is suggestive of a burin blow but Frison (1978:167) reports spearing bison in the ribs may result in burin-like slivers being removed from the tips of points. There are no signs of wear on the scar so it was probably accidental. The point was made of a blue-gray chalcedony.

Bu 175 (Figure 8l) is the midsection of a point with parallel-oblique flaking. The flakes meet in the center on one face and run across the face on the other. It is 30 mm long, 18 mm wide and 5 mm thick. It was made of a very translucent Moreau chalcedony. This is probably a portion of a Paleoindian point, perhaps the James Allen type.

Of the 22 midsections of projectile points, 7 had snap fractures at both ends, 4 had impact fractures at both ends, 2 had impact fractures at the tip and were reworked on the basal ends and 8 had impact fractures at the tip end and snap fractures at the base end. One midsection had a texture too laminar to determine the type of fracture.

Of 30 tip portions studied, 22 appeared to have been removed by snap fractures and 8 by impact fractures.

## Steel Points

The collection includes four steel points. Dimensions and shapes are shown in the appropriate table and in the illustrations. Points Bu 237 and 238 (Figure 8m and n) were found by others somewhere northwest of Hoover, S.D., probably on the Millard Nelson or Buckles ranches. Bu 239 (Figure 8o) was a gift and the provenience is unknown. Bu 240 (Figure 8p) was found in the yard at the Louis Flaigg ranch house. All were found on the surface. Points 237 and 238 show marks at the stems indicating that the points were cut from sheet steel with a chisel.

Table 3: Dimensions of Projectile Points.

Type	Ident Number	Length	Est. Total Length	Width	Thickness
Lanceolate					
Angostura	Bu 162	27	?	17	7
Angostura	Bu 163	28	?	17	6
McKean	Bu 1	26	?	17	5
McKean	Bu 70	34	40	15	5
Lanceolate Form 1	Bu 26	38	40	20	6.5
Lanceolate Form 2	Bu 165	34	?	17	6
Stemless					
Catan-like	Bu 25	37	37	19	6.5
Fresno-like	Bu 178	21	21	14	3
Fresno-like	Bu 190	15	15	12	2
Fresno-like	Bu 191	17	17	12	3
Young-like	Bu 219	36	36	25	5
Stemless Form 1	Bu 73	28	30	14	5
Stemless Form 2	Bu 215	31	31	24	6
Stemless Form 3	Bu 153	29	32	20	5
Stemmed					
Duncan	Bu 182	24	?	16	4
Duncan	Bu 183	25	35	14	6
Hanna	Bu 87	27	35	23	6.5
Hanna	Bu 88	42	42	24	8
Palmillas-like	Bu 211	29	32	21	4
Steuben-like	Bu 58	13	?	17	5
Steuben-like	Bu 143	66	66	26	10
Stemmed Form 1	Bu 51	42	?	25	8
Stemmed Form 1	Bu 144	52	52	23	9
Stemmed Form 2	Bu 119	29	?	19	5
Stemmed Form 2	Bu 126	23	?	22	4.5
Stemmed Form 2	Bu 188	21	?	20	5
Stemmed Form 3	Bu 74	45	50	20	7
Stemmed Form 4	Bu 159	36	46	14	6
Unclassified base	Bu 23	28	?	25	7

Table 3: continued

Type	Ident Number	Length	Est. Total Length	Width	Thickness
Unclassified base	Bu 60	21	?	25	6
Unclassified base	Bu 72	28	35	18	6
Unclassified base	Bu 93	24	40	25	6
Unclassified base	Bu 133	31	?	26	6
Unclassified base	Bu 187	22	?	18	5
Corner Notched					
Pelican Lake	Bu 4	13	?	21	5
Pelican Lake	Bu 13	30	30	25	5
Pelican Lake	Bu 30	40	40	21	7
Pelican Lake	Bu 36	30	33	21	4
Pelican Lake	Bu 41	54	54	28	5
Pelican Lake	Bu 46	18	?	23	5.5
Pelican Lake	Bu 57	29	29	22	4.5
Pelican Lake	Bu 89	41	46	24	6
Pelican Lake	Bu 90	19	?	24	5.5
Pelican Lake	Bu 135	45	60	25	6
Pelican Lake	Bu 140	26	35	23	4.5
Pelican Lake	Hn 3	51	51	25	6
Pelican Lake	Hn 4	21	?	24	5
Pelican Lake	Pn 1	38	43	23	7
Scallorn-like	Bu 7	35	35	13	4
Scallorn-like	Bu 9	33	34	15	4.5
Scallorn-like	Bu 20	27	38	20	5
Scallorn-like	Bu 22	37	41	16	5
Scallorn-like	Bu 45	25	25	16	4
Scallorn-like	Bu 47	20	24	15	4.5
Scallorn-like	Bu 62	30	35	19	5
Scallorn-like	Bu 134	29	33	20	5
Scallorn-like	Bu 189	21	21	17	4.5
Scallorn-like	Hn 2	20	30	19	4
Yonkee	Bu 68	26	?	23	5
Yonkee	Bu 117	28	?	24	5
Yonkee	Bu 136	40	43	20	4.5

Table 3: continued

Type	Ident Number	Length	Est. Total Length	Width	Thickness
Corner Notched Form 1	Bu 31	12	?	16	3.5
Corner Notched Form 1	Bu 44	19	?	15	4.5
Corner Notched Form 1	Bu 113	28	28	18	4.5
Corner Notched Form 1	Bu 151	20	25	16	4
Corner Notched Form 1	Bu 184	24	26	17	3
Corner Notched Form 1	Bu 212	18	30	18	3.5
Corner Notched Form 2	Bu 180	28	38	16	5
Corner Notched Form 2	Bu 186	23	35	14	3
Corner Notched Form 3	Bu 3	30	35	16	4
Corner Notched Form 3	Bu 100	34	34	16	5
Corner Notched Form 3	Bu 101	26	28	15	4.5
Corner Notched Form 4	Bu 24	18	?	17	3.5
Corner Notched Form 4	Bu 91	19	30	18	3
Corner Notched Form 4	Bu 122	24	27	14	4
Corner Notched Form 5	Bu 179	25	33	15	4.5
Corner Notched Form 5	Bu 185	22	27	17	5
Corner notched Form 6	Bu 43	27	29	21	3.5
Corner Notched Form 6	Bu 64	26	38	19	5
Corner Notched Form 6	Bu 81	31	37	20	5
Corner Notched Form 7	Bu 75	47	50	18	6.5
Side Notched					
Avonlea	Bu 176	22	23	14	3
Besant	Bu 52	22	35	17	5
Besant	Bu 77	23	?	19	6
Besant	Bu 120	49	58	23	5
Besant	Bu 139	29	29	18	5
Besant	Bu 150	38	47	23	6
Besant	Bu 214	31	41	25	5
Besant	Bu 218	22	?	18	5
Besant	Hu 1	33	38	16	5
Big Sandy-like	Bu 27	48	56	21	5.5
Big Sandy-like	Bu 29	22	?	22	5
Godar-like	Bu 48	58	58	40	6

Table 3: continued

Type	Ident Number	Length	Est. Total Length	Width	Thickness
Hawken	Bu 54	47	47	20	6.5
Oxbow	Bu 39	33	35	19	5
Oxbow	Bu 166	32	40	20	5
Plains Side Notched					
Haskell-like	Bu 8	17	21	17	4
Pekiska	Bu 130	30	30	19	5
Reed-like	Bu 33	27	27	16	5
Reed-like	Bu 35	11	22	13	2
Reed-like	Bu 42	22	22	12	3
Reed-like	Bu 85	16	27	13	2.5
Washita	Bu 53	27	30	15	5
Washita	Bu 141	16	21	13	2.5
Washita	Bu 169	13	21	12	4
Prairie Side Notched					
Irvine	Bu 5	38	38	15	5
Irvine	Bu 12	31	33	15	5
Irvine	Bu 217	36	41	19	6
Lewis Narrow Rounded Base	Bu 82	24	32	16	5
Lewis Narrow Rounded Base	Sh 2	32	37	15	5
Tomkins Side Corner Notched	Bu 56	16	22	16	3.5
Tomkins Side Corner Notched	Bu 114	32	35	15	4
Tomkins Side Corner Notched	Bu 181	26	26	15	4
Tomkins Side Corner Notched	Bu 237	12	17	11	3
Swift Current	Bu 34	12	27	18	3
Side Notched Form 1	Bu 227	40	43	30	7
Side Notched Form 2	Bu 19	25	25	18	6
Side Notched Form 2	Bu 37	26	?	15	4
Side Notched Form 2	Bu 76	34	34	16	5
Side Notched Form 2	Bu 83	19	30	18	4
Side Notched Form 2	Bu 97	27	27	15	5
Side Notched Form 2	Bu 121	20	30	18	4.5
Side Notched Form 3	Bu 15	41	55	20	5
Side Notched Form 3	Bu 32	44	48	18	5

Table 3: continued

Type	Ident Number	Length	Est. Total Length	Width	Thickness
Side Notched Form 3	Bu 50	31	45	21	6
Side Notched Form 4	Bu 14	22	30	17	4.5
Side Notched Form 4	Bu 38	40	42	21	5
Side Notched Form 4	Bu 108	29	35	17	5.5
Side Notched Form 5	Bu 71	37	42	20	4
Unclassified Base	Bu 2	22	?	25	5
Unclassified Base	Bu 40	29	?	27	7.5
Unclassified Base	Bu 59	25	?	29	6
Unclassified Base	Bu 65	16	?	19	6
Unclassified Base	Bu 80	32	?	30	8
Unclassified Base	Bu 103	11	?	25	4
Unclassified Base	Bu 112	16	?	21	5
Unclassified	Bu 123	14	?	18	4
Unclassified Base	Bu 129	11	?	20	4
Unclassified Base	Bu 145	16	?	17	5
Unclassified Base	Bu 213	17	?	22	6
Steel Point	Bu 237	49	49	23	2
Steel Point	Bu 238	58	58	23	2
Steel Point	Bu 239	64	64	14	2
Steel Point	Bu 240	94	94	24	2

# Other Artifacts

## Perforators

Nine of the 12 perforators in the collection are complete enough to indicate their size and shape. They were made of the following materials:

Identification Number	Material	Thickness mm	Remarks
Bu 11 (Figure 9a)	Brown chalcedony (KRF)	4	Snap fracture
Bu 105 (Figure 9c)	Tan chalcedony	3	Snap fracture
Bu 216 (Figure 9f)	Gray quartzite (local)	8	Snap fracture
Bu 220 (Figure 9g)	Brown chalcedony (KRF)	10	Snap fracture
Bu 222 (Figure 9h)	Gray-brown quartzite	7	Snap fracture
Bu 223 (Figure 9i)	Blue and gray mottled chert	6	
Bu 224 (Figure 9j)	Black Porcellanite?	5	Snap fracture
Bu 225 (Figure 9k)	Blue-gray chalcedony	7	Twist fracture
Bu 226 (Figure 9l)	Blue-gray chalcedony	4	Burned?

The other three fragments consist of two midsections, Bu 138 (Figure 9d) and 157 (Figure 9e) and a tip, Bu 95 (Figure 9b). All three were made of blue-gray chalcedony. Bu 157 is unique for parallel-oblique flaking which meets in a center ridge. The fragment is 24 mm long, 5 mm thick and tapers uniformly from a width of 16 mm at one end to a width of 8 mm at the other.

## Stemmed Lunate Unifaces

These two unusual specimens were described by the writer in the Newsletter of the Texas Archaeological Society (Flaigg 1984). Both specimens were found on the Flaigg ranch, one near the ranch house and the other about three quarters of a mile northeast of the ranch house at a tipi ring site.

Bu 6 (Figure 9m) was made of a fine-grained gray quartzite. It is 48 mm long, 25 mm wide and 7 mm thick. The blade is entirely unifacial but the stem has been knapped on both faces. Most of the stem has been smoothed by grinding. The tip of the tool appears to have been snapped off by pressure from the unifacial face. The concave edge of the tool shows heavy wear and numerous step fractures along the entire ridge. The convex edge of the tool has



Figure 9: Perforators, stemmed lunate unifaces, and scrapers. Perforators a-l, stemmed lunate unifaces m-n, scrapers o-r.

a broad flat edge that apparently was formed by a long flake scar on the distal two-thirds of the blade but even so the entire edge shows heavy wear.

Bu 142 (Figure 9n) was made of a blue-gray chalcedony. It is 38 mm long, 19 mm wide and 7 mm thick. It is essentially unifacial with the ventral side of the flake having only a few scattered flake scars. All of the stem has been ground. The concave edge is characterized by heavy step fractures and strong edge wear. The convex edge has a few step fractures and heavy edge wear and the tip is similarly marked.

Gant (1965:35) reports a similar tool from the Gant site. The Gant site is about 45 miles south of the Flaigg ranch. The provenience of the Gant specimen was not reported but the site has McKean Complex artifacts which are Plains Middle Archaic.

Converse (1963:93-121) identifies a similar tool as a "hafted shaft scraper" which he suggests was used during the Early Archaic. He reported that they are extremely scarce and one of the rarest of the Ohio flint tools.

## Scrapers

Of all the scrapers collected, only five small, unifacial scrapers were saved. The sizes and materials used are as follows:

Number	Dimensions - mm			Material
	Length	Width	Thickness	
Bu 241 (Figure 9o)	30	23	13	Yellow jasper (Spanish Diggings?)
Bu 242 (Figure 9p)	27	19	11	Gray chert (Minnelusa?)
Bu 243 (Figure 9q)	32	23	6	White chert (Minnelusa?)
Bu 244 (Figure 9r)	37	26	6	Pink chalcedony
Bu 250	31	24	7	Tan chert (Minnelusa?)

All five scrapers show evidence of heavy use as witnessed by numerous stem fractures and use polish around the edges. In addition, all but Bu 244, show use polish on the ridges of the flaked side. Bu 250 is not illustrated.

## Knifelike Bifaces

Ten bifaces were saved which were thought to be knives. At that time I was unaware of wear patterns, use polish and other evidence of tool use; they were saved because they were known to be tools of some sort. The dimension of the artifacts and the materials they are made of are as follows:

Number	Dimensions - mm			Material
	Length	Width	Thickness	
Bu 116	88	33	9	Tan-gray chert
Bu 177	72	28	9	Tan chert
Bu 229	64	34	14	Brown quartzite? Silic. wood?
Bu 231	68	31	10	Reddish-brown quartzite (Hogback?)
Bu 232	80	33	8	Brown quartzite (Hogback quartzite)
Bu 233	59	25	9	Brown jasper
Bu 234	80	27	9	Silicified wood, heavily patinated
Bu 235	52	23	8	Brown chalcedony (KRF)
Bu 236	67	36	11	Yellow silicified wood
Sh 3	71	29	7	Purplish chert. Four bevel

Bu 116 (Figure 10a) may have been a spear point as edge damage appears to be minimal. Most of the knapping was done by percussion methods. The base shows “haft polish” on both faces.

Bu 177 (Figure 10b) was made largely by percussion methods. Both edges show considerable wear. It may have been hafted as the squared end has been thinned.

Bu 229 (Figure 10c) is a crude tool made by percussion methods. All edges show heavy wear. There is no evidence of hafting.

Bu 231 (Figure 10d) is another crude biface made by percussion flaking. The material is a coarse-grained quartzite which may account for some of the crude appearance. All of the edges are worn and there is no evidence of hafting.

Bu 232 (Figure 10e) looks like a knife that has been snapped off at one end. It was made by a combination of percussion and pressure flaking. Much of the original flake surface shows on one face and on about a quarter of the opposite face. One edge of the flake was thin and needed little sharpening but the opposite edge is steeply beveled to produce an edge.

Bu 233 (Figure 10f) appears to be the remnant of a larger tool. There is a small shoulder on one edge and the steep beveling on the opposite edge suggests that the tool originally was wider and there may have been a shoulder on that side. The overall impression is that this is a tool which has been resharpened so much that the stem is now longer than the blade. The knapping is a combination of percussion and pressure flaking. The steep edge shows a lot of step fractures as though it had also been used for scraping.

Bu 234 (Figure 10g) is almost planoconvex in cross section, with steeply beveled edges on the convex side. All edges show heavy wear. The material was identified as silicified wood but it may be silicified lignite as it shows a lot of plant fiber oriented in many different directions.

Bu 235 (Figure 11a) is the smallest artifact in the group and shows little edge damage. However, the convex face of the tip shows polish and the tip is damaged. It might have been used as a perforator.

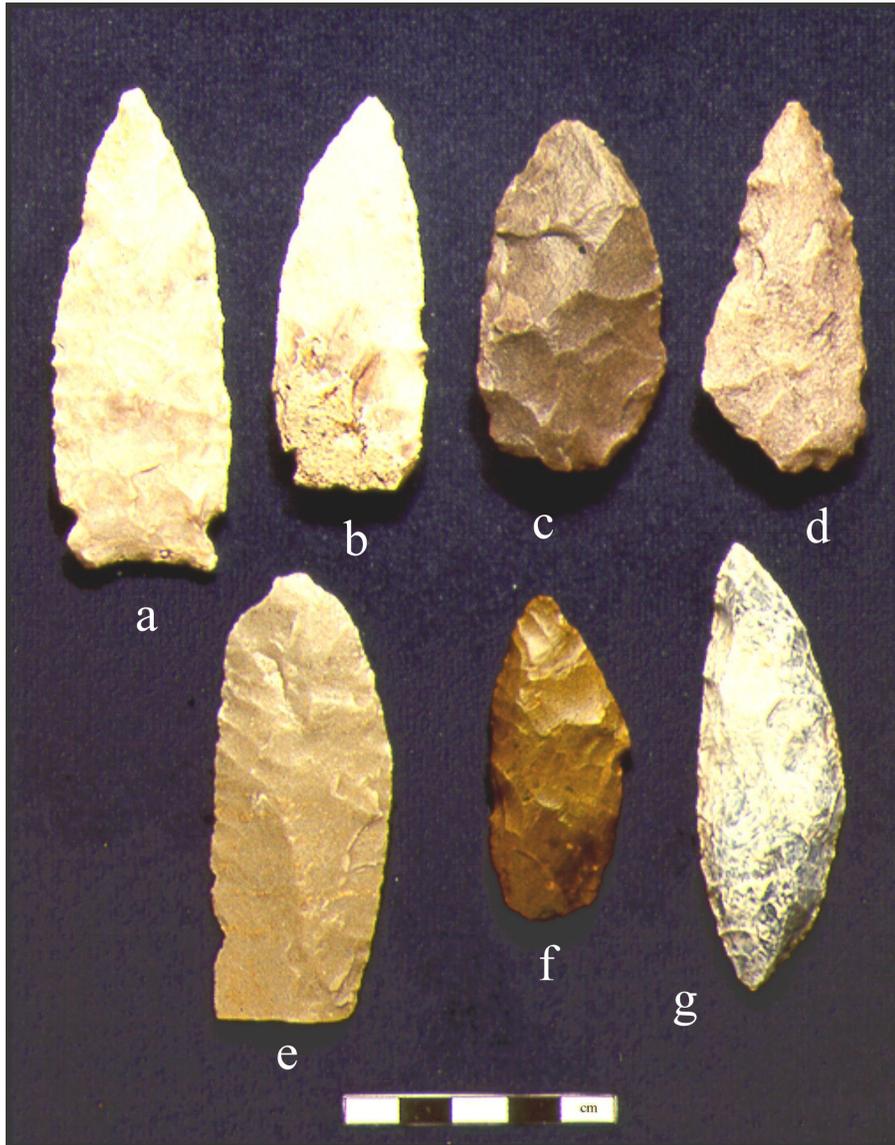


Figure 10: Knife-like bifaces: Bu 116 a, Bu 177 b, Bu 229 c, Bu 231 d, Bu 232 e, Bu 233 f, Bu 234 g.

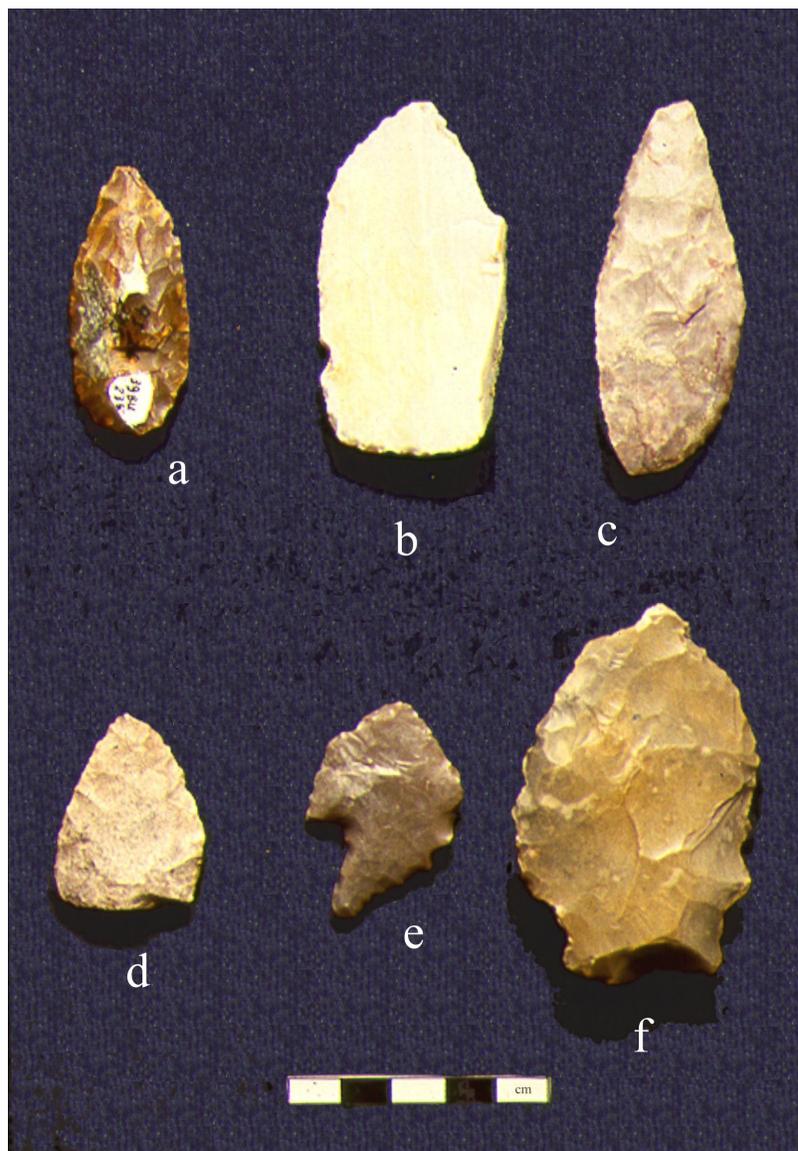


Figure 11: Bifaces. Knife-like: Bu 235 a, Sh 3 b. Miscellaneous: Bu 221 c, Bu 228 d, Bu 230 e.

Bu 236 (Figure 11b) is a minimally shaped wedge of Moreau chalcedony. A little bit of pressure flaking was used to put an edge on this tool. It is heavily patinated on the thick edge and on one face. The patinated surface is probably the cortex of the nodule from which the flake was struck. The configuration of the flake results in a neat backed blade.

Sh 3 (Figure 11c) is the only complete four-bevel tool in the collection. It was found near Cuny Table in the White River Badlands. All four edges are worn and both faces show some use polish.

## Miscellaneous Bifaces

Four bifaces of varying size and shape were placed in this group. It is the leftovers from the other classifications. Bu 221 (Figure 11d) is a triangular shaped biface with one straight edge and two convex edges. It may have been a projectile point with the stem broken off but the fracture looks more like the unworked edge of a flake. It might have been a knife as the convex edges show signs of wear. The artifact is made of a gray-brown quartzite.

Bu 228 (Figure 11e) is a puzzle. It may be a reworked projectile point with a deeply bifurcated stem. If this were the case one leg of the stem was broken off and the base reworked so that no trace of the missing leg remains. It looks as if the remaining leg was made into a perforator. It was made of brown chert.

Bu 230 (Figure 11f) is a thick (13mm) leaf-shaped artifact with a suggestion of a stem. It was shaped by percussion methods and may be a preform. A couple of places on the edges appear to have been battered in some manner. It was made of a brown, waxy chert.

Bu 245 (Figure 12a) is large oval tool made of Tongue River silicified sediment. It is 188 mm long, 114 mm wide and about 38 mm thick. One end is well battered. It is a unifacial tool. The worked side is steeply beveled around a central area showing the cortex of the original nodule. The battering suggests that it was used as a chopper.

## Shaft Abrader

A grooved shaft abrader—Bu 252 (Figure 11b)—was excavated from beneath a cluster of Tongue River silicified sediment cobbles—possibly a hearth. These stones were a few feet southeast of a tipi ring. The abrader was found at a depth of 12 inches. It is made of a medium-gray sandstone like that which caps Deers Ears Butte a few miles south of the Ranch. It is 180 mm long, 83–93 mm wide, and 44–48 mm thick. Overall, it has a brick shape, and four of the six faces have been ground. The grinding was done by my father, who used it to sharpen metal tools. It was found whole but later dropped from a shelf. The pieces were glued with hide glue, which was the only glue available on our ranch in those days. One of the large faces has a V-shaped longitudinal groove measuring 10 mm wide and 5 mm deep.

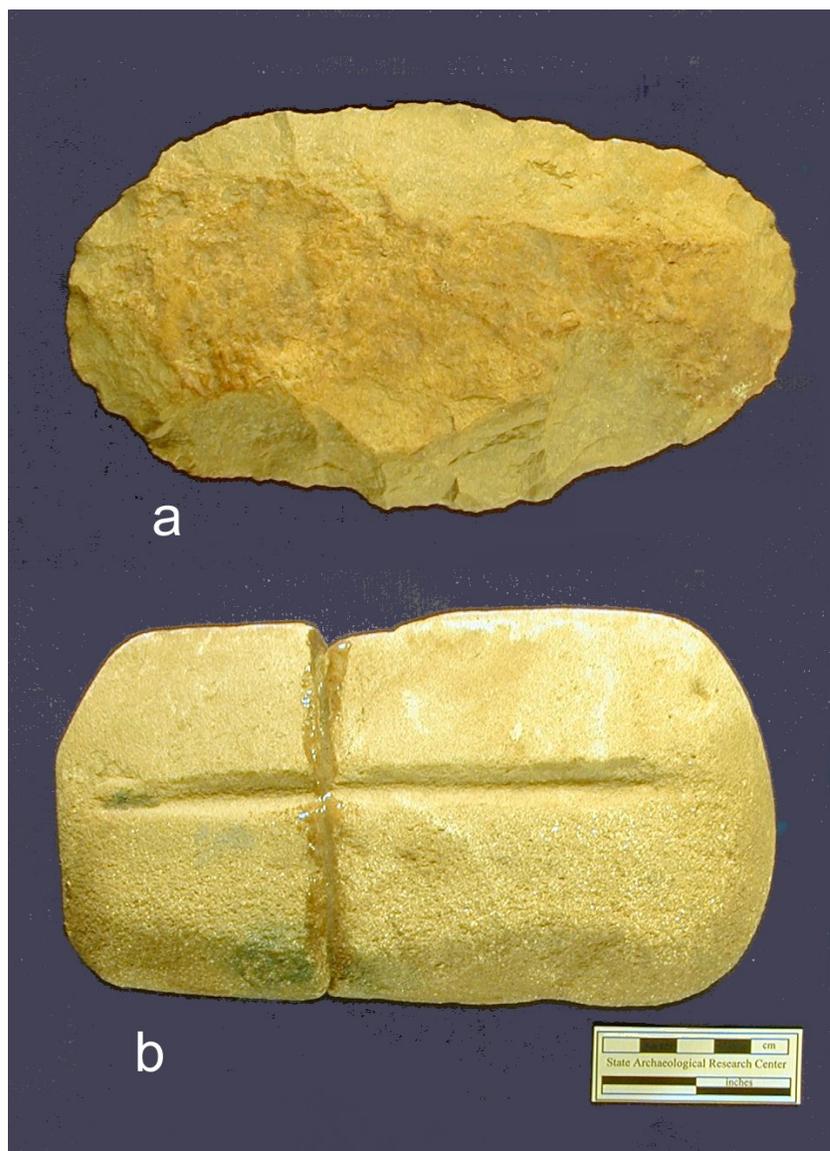


Figure 12: Biface and shaft abrader. Biface: Bu 249 a. Shaft abrader: Bu 252 b.

## Grooved Mauls

Four grooved mauls are included in the collection. One, Bu 245, was found on the Flaigg ranch and Bu 246 was found in the N1/2NW1/4NW1/4 Sec. 19, T13N, R8E. The other two were gifts and their origin is unknown. The dimensions and weights of the mauls are as follows:

Number	Dimensions - mm			Weight
	Length	Width	Thickness	Grams
Bu 245	83	80	58	431
Bu 246	113	85	70	978
Bu 247	101	76	58	785
Bu 248	133	100	62	1171

Bu 245 (Figure 13a) was made of a fine-grained, well-cemented gray sandstone. Its shape is that of a flattened round nodule with a shallow groove around its midsection. The groove was made by grinding. Weathering has so affected the surface of the artifact that use marks are obscured. In view of the material, it is doubtful if it was used for heavy battering.

Bu 246 (Figure 13d) was made of a tan limestone. One end is rounded and the other end has a flat face. Its cross section is a circle, flattened on one side. Although the specimen is highly eroded, the poll end appears heavily battered. As matter of fact, the specimen was found in two pieces. The groove is well formed and extends completely around the tool.

Bu 247 (Figure 13b) was made of a fine-grained, black and white granite. It has a flattened end and a round end both of which show signs of heavy use. It has an oval cross section and the groove is well formed and extends completely around the tool.

Bu 248 (Figure 13c) was made of basalt. It is irregularly shaped both in profile and in cross section. Both ends are heavily battered, especially the poll end which has long spalls extending to the groove. The groove appears to have been made by pecking. It extends completely around the artifact.

## Ceramics

Sherds were found at only one location—on a terrace on the north side of the South Fork of the Moreau River west of the Nicholson ranch buildings. Only twelve small sherds were picked up but there were more at the site. The sherds are sand tempered with dark gray paste and a tan slip. They are not polished. The largest piece is about 25 × 20 mm and most of the sherds are 4 mm thick. No rim sherds were found. There seem to be some sort of corrugated patterns on the external surface of the sherds.

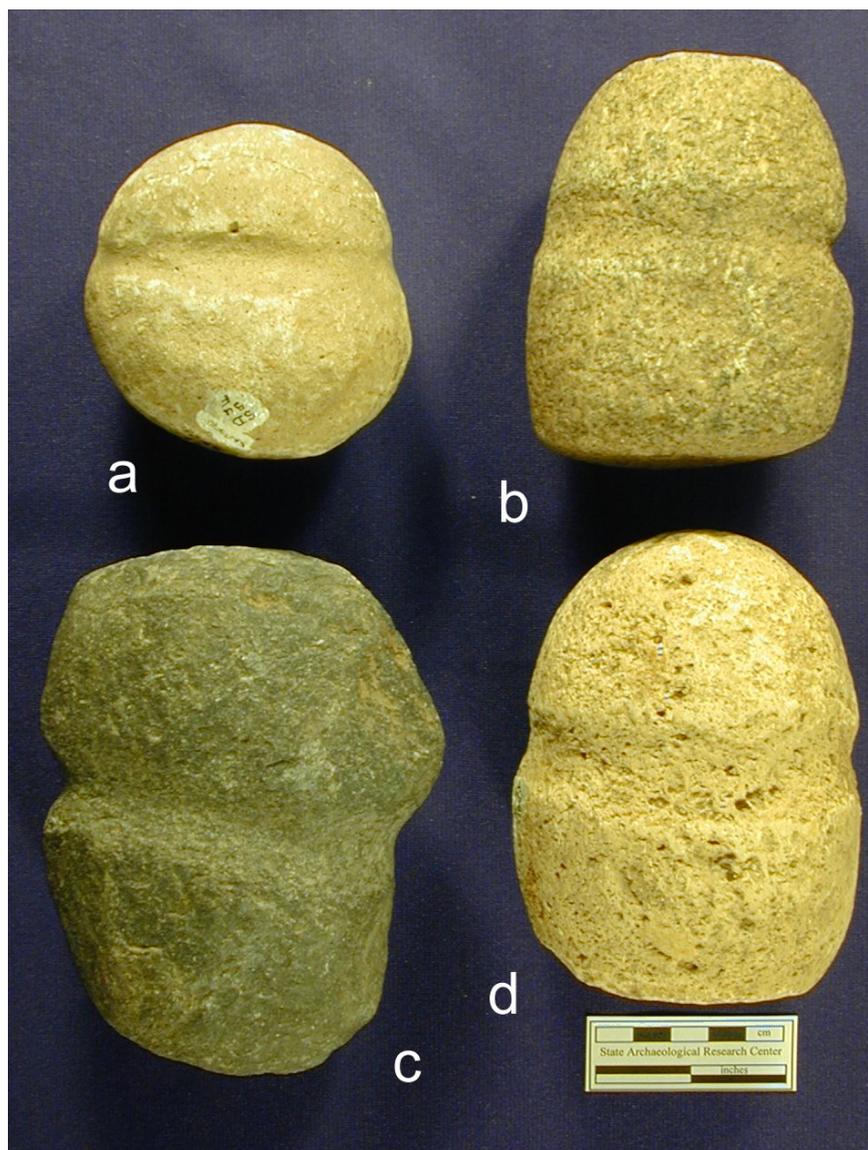


Figure 13: Grooved mauls. Bu 245 a, Bu 247 b, Bu 248 c, Bu 246 d.

## Glass Beads

Sixty-nine glass beads were found in anthills on the L. Flaigg ranch. The colors, numbers and sizes of the beads are summarized as follows:

Color	Number	Dimensions (mm)					
		Diameter			Length		
		Min	Max	Avg	Min	Max	Avg
Black	13	3.4	4.4	3.89	2.5	3.8	2.77
Blue	26	2.4	3.8	3.07	1.8	2.8	2.18
Red	7	3.4	3.8	3.59	2.3	2.8	2.40
White, opaque	22	2.2	3.8	2.93	1.5	2.6	2.25
White, translucent	1			4.00			2.00

The black beads were the largest. Of the 13 beads, 5 are cylindrical in shape and 8 are barrel shaped. They are simple beads, having a monolithic structure.

The blue beads are quite varied in size and color. They are also of simple construction. Only one has a cylindrical shape—all the rest are barrel shaped.

The red beads are the most consistent in size and shape. They are compound beads with a white ceramic-like inner layer and a translucent outer layer. They are all barrel shaped.

The white opaque beads are quite varied in size also. They are simple beads. Six have a cylindrical shape and the rest are barrel shaped. Most of the white beads have a porcelain-like texture. The white translucent bead is a simple donut-shaped bead.

## Miscellaneous Artifact

One artifact was left on the ranch and is described from memory. The dimensions are approximate and are given in English units. It was a large D-shaped tool with the straight edge being the handle and the curve the cutting edge. It was about eight inches by eight inches wide and about an inch thick at the straight edge, tapering in thickness towards the rounded edge. It was made of a large spall from a boulder of Tongue River silicified sediment. The spall face was largely unworked and the rind face was thinned by percussion flakes that shaped the cutting edge. The tool could have been used as a two-fisted chopper or as a digging implement. Nothing is remembered of any use marks on the tool.

# Temporal Implications

The chronology proposed by Frison (1978:83) is used in evaluating the significance of point types in this collection.

The presence of Angostura, Scottsbluff-like and some parallel- oblique flaked points indicate that northwestern South Dakota has been occupied by prehistoric people since at least late Paleoindian times.

The Oxbow and Hawken points hint that there was continuing activity by prehistoric people during the late Early Plains Archaic and the McKean, Duncan and Yonkee points show considerable activity during the Middle Plains Archaic. Pelican Lake points suggest occupation during the Late Middle Plains Archaic and extending into the Late Prehistoric Period. Further witness to the Late Plains Archaic occupation is given by Besant points. The Besant, Godar-like, Big Sandy-like and the Steuben-like points are suggestive of Woodland influences.

Occupation during the Late Prehistoric is indicated by an abundance of arrow points of the Avonlea, Scallorn-like, Prairie and Plains side-notched, and corner-notched forms. Grooved mauls (Frison 1978:82) and sherds give further evidence of Late Prehistoric occupants.

Contact with Europeans is indicated by the steel points and a few glass beads.

This range of projectile points should alert professional and avocational archaeologists to the long prehistoric occupation of this area and encourage them to be on the lookout for buried sites with stratigraphic significance.

# Significance of The Collection

The collection, although small and lacking stratigraphic information, provides a sample of the artifacts to be found in northwestern South Dakota. It witnesses to occupation by prehistoric people from late Paleoindian times to the European occupation.

The tools are all related to hunting activities as there is a complete lack of stone milling tools. I do not believe that milling tools were overlooked.

There are implications that the prehistoric occupants of this area traveled to distant areas or traded with people from those areas to obtain lithic materials. The sources of Knife River flint are about 155 miles north of the collected area, the Spanish Digging sources in Wyoming are about 200 miles to the southwest, and the sources of Hogback quartzite and Minnelusa chert are at least 50 miles away. The pink chalcedony from the White River Badlands can be found about 100 miles southeast of the collected area.

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